

AFRICA RISING - Enhancing partnership among Africa RISING, NAFKA and TUBORESHE CHAKULA Programs for fast tracking delivery and scaling of agricultural technologies in Tanzania

Quarterly Progress Report (1 January 2015 – 31 March 2015)



Photo credit: Haroon Sseguya

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Contract No. xxxx

IITA – International Institute of Tropical Agriculture

QUARTERLY PERFORMANCE REPORT

(1 January 2015 – 31 March 2015)

Thematic Implementing Partners:

AfricaRice – Rice Systems

AVRDC – Vegetables

CIMMYT – Maize Systems

IITA – Postharvest and Nutrition

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ACRONYM LIST

AfricaRice	Africa Rice Center
Africa RISING	Africa Research in Sustainable Intensification for the Next Generation
ARI-Hombolo	Agricultural Research Institute, Hombolo
ASA	Agricultural Seed Agency
AVRDC	The World Vegetable Center
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
COUNSENUTH	Center for Counseling, Nutrition and Health Care
DAICO	District Agriculture, Irrigation and Cooperative Officer
FtF	Feed the Future
GAP	Good agronomic practices
HORTI-Tengeru	Horticultural Research and Training Institute-Tengeru
ICRAF	World Agroforestry Center
IITA	International Institute for Tropical Agriculture
IPM	integrated pest management
NAFAKA	Tanzania Staples Value Chain Activity
PPP	Public-Private Partnership
SMS	subject matter specialist
TFNC	Tanzanian Food and Nutrition Center
TOSCA	Tanzania Official Seed Certification Agency
TUBOCHA	Tuboreshe Chakula
QDS	quality declared seeds
VAEOs	Village Agricultural Extension Officers
ZOI	(FtF) Zone of Influence

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I EXECUTIVE SUMMARY

In the past quarter, the Africa RISING-NAFAKA-TUBOCHA partnership and scaling project has accomplished a variety of activities. We report these achievements under four themes: maize, rice, vegetables and post-harvest/value addition. For all the four themes, villages were selected within the FtF zones of influence in Morogoro, Dodoma and Manyara Regions. The maize theme completed selection of villages and establishment of demonstration sites in 30 villages – 14 in Manyara, 11 in Morogoro and five in Dodoma. For other themes more sites will be identified: the vegetables theme has so far selected and established sites at nine sites, six in Manyara and three in Dodoma; for rice, the focus has been in the rice growing areas of Morogoro (8 sites) and Mbeya (4 sites). Various crop management and natural resource conservation practices were established in all sites. All crop-related themes have included good agricultural practices. The maize theme added use of tied ridges and intercropping with legumes as natural resource conservation practices. The rice and vegetable themes are promoting appropriate practices of use of chemicals. Specifically for rice, promotion of motorized paddy weeders and development of weed management using an electronic platform 'RiceAdvice-Weeds' have been initiated. The post-harvest/nutrition team accomplished a baseline survey on constraints associated with post-harvest losses, which will form the basis for subsequent activities. The main problems and challenges experienced include unpredictable weather, which has led to delays in establishment of some sites and low performance of those established; lack of presence of a partner, NAFKA, in some sites where the project is operating; some farmers withdrawing from participation in the project, which affects attainment of targets; and lack of availability and inadequate access to appropriate inputs for farmers; a scenario that requires better planning in the subsequent quarter. The end of TUBOCHA activities in the project area has also affected some of the post-harvest activities. A plan to fill the gap created as a result will be developed with NAFKA. Activities for the next quarter include finalization of the M&E framework for the project, planning for launching of scaling activities in Mbeya and Iringa Regions, formation of R4D/Innovation Platforms to facilitate scaling, continuous training of farmers/farmer trainers as well as management of the sites and conducting surveys (rice theme) for value chain enhancement.

2 INTRODUCTION

2.1 Project description

Africa RISING partners are involved in identifying and developing best performing interventions for improving agricultural production. These are compiled into information and technology packages to be delivered through a network of NAFKA, TUBOCHA, and other public and private sector actors, creating an opportunity for mainstreaming into wider rural development programs. Attractive interventions include the introduction of improved crop varieties, dissemination of best-bet crop management packages, rehabilitation and protection of natural resources, and improvements in food and nutrition security. The main project description has been further refined with activity specifications during the thematic work plan developments, briefly described below.

Under the rice production system, the technologies include appropriate small-scale agricultural equipment, good agricultural practices (e.g. row planting, land leveling, weeding), strengthening market information and value chains, extension materials, and decision support tools for farmers.

The vegetable component is introducing superior varieties of tomato (*Solanum lycopersicon*, Tengeru 2010), African eggplant (*Solanum macrocarpon*, Tengeru White), amaranth (*Amaranthus* spp., Madiira I), African nightshade (*Solanum scabrum*) and jute mallow (*Corchorus olitorius*) that have resulted in increasing production by 9–40%, and contributed to higher household consumption of about 200g/person/day. Empowering smallholder farmers to participate in the vegetable seed system is essential to enhance the availability of superior varieties for improved nutrition and family incomes. Training will be conducted to cover technical/agronomic aspects, as well as sessions on laws, regulations, and procedures for QDS in Tanzania, in collaboration with the Agricultural Seed Agency (ASA) and the Tanzania Official Seed Certification Agency (TOSCA). AVRDC will leverage its extensive network with seed companies in Tanzania to streamline seed and actual vegetable production in the target areas.

Six maize varieties (TAN H600, SAH 636, NATA H105, NATA K6Q, MAMS H913, MERUHB 513), three common bean varieties (Jeska, Uyole Njano, SUA Njano), one soybean variety (Line 8) and two groundnut varieties (Pendo, Mnanje) will be promoted for mono- or intercrop systems. These are tolerant to many environmental stresses such as drought and low soil fertility, as well as many major common foliar plant diseases. Better agronomic practices and integrating *in situ* water harvesting techniques such as tied ridges and ripping (where hard pans exist) will have a significant impact on achieving the potential yields of these new crops. Farmer-friendly seed systems will be developed in collaboration with seed companies such as SUBA AGRO, MAMS AGRICULTURE, AMINATA QUALITY Seeds, TANSEEDS and MERU AGRO.

The post-harvest and nutrition component will introduce food fortification in collaboration with TUBOCHA, improved grain storage facilities such as the SGB and PICS bags for hermetic storage to prevent losses from pest attacks, an innovative low-cost drying case to reduce spoilage of produce during storage including infestation with fungi causing mycotoxin, and community processing of crop products to reduce drudgery, especially for women and also improve food quality and incomes. All technology introductions will be complemented by the appropriate training of farmers in their use. These collaborative activities are designed to strengthen supply chain management systems from the farm to the miller. A well-managed raw materials supply chain will ultimately contribute to producing a safe, quality food product and decrease cost of goods sold by minimizing losses.

Africa RISING partners will play a leading role in identifying, working with, and building the capacity of local research and development institutions for synergies and institutional strengthening, and will focus on engaging smallholder farming communities as a means of scaling the technologies. We shall also engage local committees, District committees, and representatives from local communities to ensure that the project's outcomes and sustainability will be achieved.

2.2 Goals and objectives

The objective of the project is to accelerate the process of scaling and delivery of agricultural technologies to improve smallholder maize- and rice-farming systems, household nutrition, and dietary practices in Tanzania's FtF zone of influence as a means of enhancing food, nutritional, and financial security among the least endowed smallholders (http://africa-rising.wikispaces.com/AR_NAFAKA_TUBOCHA_Project). The goal is to (a) have at least 47,000 households with access to the technologies to diversify and increase their food supply and income sources, and improve the quality of degrading smallholder cropland, (b) expand the area under improved rice production technologies by at least 58,000 ha, and (c) increase yields of both maize and rice by 50% per unit area as a result of these technologies being adopted. These aims will be achieved by the joint implementation of scaling and lesson-learning events for the intensified production of maize, vegetables, and rice using improved varieties, and targeted production and product-loss reducing technologies that are underpinned by scientific evidence. Specific objectives are as follows:

1. Introduce and promote improved and resilient varieties of food crops to farm households in a manner that complements their on-going farm enterprises, contributes to sustainable agricultural resource management, and offers nutritional advantages and alternative market channels;
2. Disseminate best-bet agronomic management packages around the most promising new crop varieties suited to widely representative agro-ecological zones and market proximity;
3. Protect land and water resources and foster agricultural biodiversity through the introduction of soil and water management practices;
4. Increase food security and improve household nutrition among the most vulnerable households and their members, especially women and children, by introducing locally adapted and nutrient-rich vegetables;
5. Introduce and promote postharvest management technologies for maize, rice, legumes, and selected vegetable crops to reduce losses and bring quality up to market standards;
6. Offer and expand capacity services to members of grassroots farmers' associations, platform partners and development institutions in the scaling process (capacity building), paying particular attention to the special opportunities available to women farmers as technical and nutritional innovators and resource managers.

Thematic activities were formulated and are being implemented to address these objectives.

2.3 Geographic Zones of Influence

During the 3-year project period, activities will be conducted in the primary Regions of Manyara, Dodoma, and Morogoro, with extension to Iringa and Mbeya planned in year 2, all in the FtF's ZOI (Fig. 1).

I). Action sites are selected according to the following criteria:

- (i) The districts and villages were selected based on agro-ecological characteristics that are suitable for the selected technologies as well as availability of suitable partners
- (ii) In addition, the siting of farm sites was guided by a combination of visibility, accessibility and land suitability.

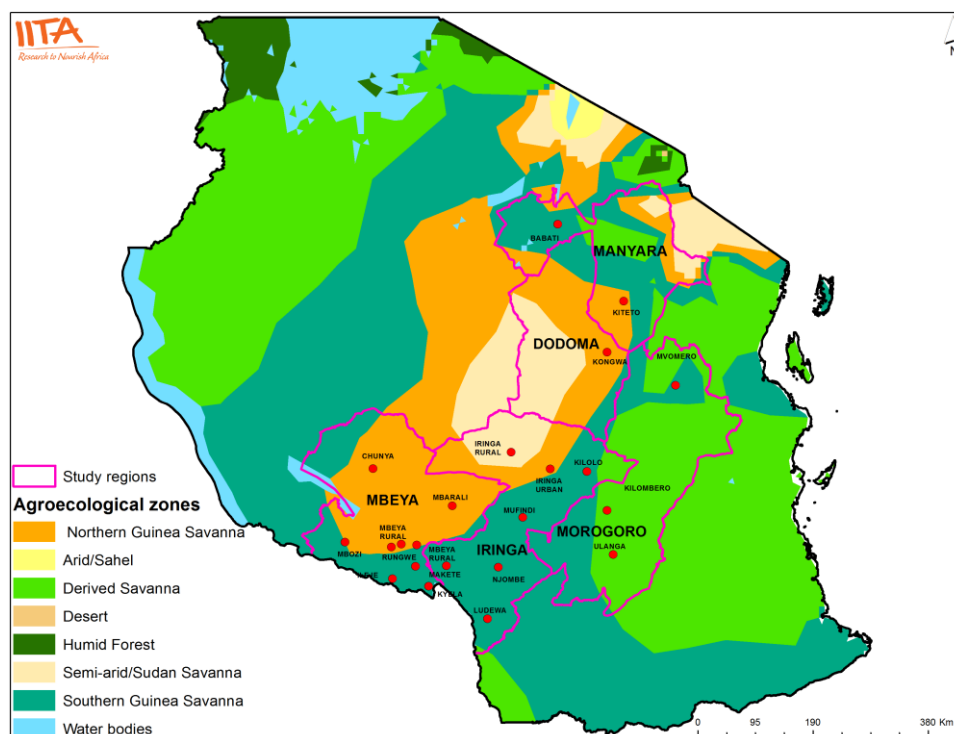


Figure 1: Map of the derived agro-ecological zones of Tanzania showing the location of the project action regions. Source: Project document at http://africa-rising.wikispaces.com/AR_NAFAKA_TUBOCHA_Project

3 IMPLEMENTATION PROGRESS

3.1 Site Selection

The sites for project activities by system are indicated in Table 1 (maize), Table 2 (rice) and Table 3 (vegetables). The processes of site selection and demonstration implementation were guided by protocols/criteria indicated in section 2.3, and in consultation with local government staff (DAICOs, subject matter specialists and VAEOs).

Table 1: Action districts and villages for the maize systems activities

Region	Districts	Villages
Manyara	Babati	Eyamangu, Galapu, Orng'adida, Sangara, Duduye, Eyasam, Seloto, Halu and Matufa.
	Kiteto	Esuguta, Mbijiri, Kaloleni, Kiperesa and Ngipa
Dodoma	Kongwa	Vihingo, Lengaji, Ndurugumi, Ndalibo and Chang'ombe
Morogoro	Mvomero	Msufini, Kigugu, Mbogo, Lukenge, Kwadoli and Hoza
	Kilosa	Ng'ole, Ulaya, Kitete, Mandela and Magua

Table 2a: Action districts and villages for the rice systems agronomy activities

Region	Districts	Villages
Morogoro	Kilombero	Msufini, Idete, Lungongole Kiberege, Lumemo, Michenga, Sagamaganga
	Mvomero	Wami Dakawa
Mbeya	Kyela	Kilasilo, Mbako, Ibungu
	Mbarali	Mahongole

Table 2b: Action districts and villages for the rice systems value chain and market activities

Region	District	Villages
Morogoro	Kilombero	Signal, Kiberege, Mang'ula 'A', Mngeta, Mahutanga, Msolwa Ujamaa, Mkula, Msufini, Udagaji, Mbingu, Chisano

Table 3: Action districts and villages for the vegetable activities

Region	Districts	Villages
Manyara	Babati	Maweni, Endadosh and Sagara
	Kiteto	Kaloleni, Kibaya and Sunya
Dodoma	Kongwa	Chamkoroma, Songambe and Tubugwe

Choice of postharvest action sites will follow on activities of the other project components at harvest time.

3.2 Project Management

The project partners have continued making efforts to work together to achieve the project goal. The technology scaling specialist joined the team in mid-February 2015, and he will play a role in coordination of project activities; he operates from Morogoro to be closely located with NAFKA. A project implementation progress meeting was held on March 4, 2015 at NAFKA offices in Morogoro and it was also attended by a representative from USAID Tanzania (Elizabeth Maeda). The minutes are available on this link: <http://africa-rising.wikispaces.com/file/view/AR-NAFKA%20Project%20Partners%20Meeting%20Minutes%20-31March2015%20%28Final%20version%29.doc>. A number of issues arose, including the need to appropriately involve the private sector in activities relevant to the project, getting information for GPS locations for all project demonstration sites (NAFKA to provide) for monitoring purposes, and getting up-to-date information about the sub-grantees in Mbeya and Iringa where the project will be launched in the second year.

3.3 Better crops

Maize system: Table 4 shows the maize and legume varieties being promoted in the selected 29 villages across five districts. Each village has one demonstration site for maize, except Seloto and Halu in Babati District (Manyara Region).

Table 4: Improved maize and legumes established at demonstration sites for scaling variety differences for different villages address agroecological suitability.

District	Village	Farmer name where located	Maize hybrid	Improved legumes	Planting date
Babati	Seloto-1	Daniel Domu	MAMH913 and TZH538		10/1/2015
	Seloto-2	Rozalia Harueli	TZH538 and TZH536		11/1/2015
	Seloto-3	Gabriel Leonce	TZH536 and MAH913		12/1/2015
	Halu-1	Marko Qaway	TZH536 and SC 627		13/1/2015
	Halu-2	Simeon G. Laway	TZH538 and TZH536		14/1/2015
	Matufa	Benson Charle	TZH536 and SC 627		14/1/2015
	Eyamango	Farmer group	MERUHB513	Beans- Uyole Njano	13/1/2015
	Orng'adida	Farmer group	MERUHB513	Beans- Uyole Njano	14/1/2015
	Duduye	Farmer group	MERUHB513	Beans- Uyole Njano	16/1/2015
	Eyesam	Farmer group	MERUHB513	Beans- Uyole Njano	15/1/ 2015
	Sangara	Farmer group	MERUHB513	Beans- Uyole Njano	17/1/2015
Kongwa	Ndurugumi	Yohanna Issaya	NATAK6Q	Groundnuts pure stand- Mnanje and Pendo	28/12/2014
	Chang'ombe	Isaya L. Mtitu	NATAK6Q	Groundnuts pure stand- Mnanje and Pendo	31/12/2014
	Vihingo	Farmer group	NATAK6Q	Groundnuts	30/12/2014

				pure stand-Mnanje and Pendo	
	Ndalibo	Farmer group	NATAK6Q	Groundnuts pure stand-Mnanje and Pendo	29/12/2014
	Lengaji	Msafiri E. Kutamika or Mama Grace Majuto	NATAK6Q	Groundnuts pure stand-Mnanje and Pendo	12/12/2014
Kiteto	Esuguta	Agnes Maganga	NATAHI05		07/01/2015
	Ngipa	Mama Mahehe Salum	NATAHI05		11/01/2015
	Mbigiri	Elenei Elias Sogodi	NATAHI05		19/01/2015
	Kaloleni	Mama Hawa Munga	NATAHI05		20/01/2015
	Kiperesa	Farmer group	NATAHI05		12/12/2014
Kilosa	Ng'ole	Titus Simon	TAN H600 and NATA I04		18/2/2015
	Ulaya	Hamisi Kapita	TAN H600 and NATA I04		19/2/2015
	Kitete	Farmer group-Leader to be elected later	TAN H600 and NATA I04		5/3/2015
	Mandela	Madison Chilunda	TAN H600 and NATA I04		6/3/2015
	Maguha	Alex Mbigo	TAN H600 and NATA I04		26/3/2015
Mvomero	Kwadoli	Abdallah Kileo	NATAK6Q	Soybean-Line 8 and beans Uyole Njano	24/03/2015
	Dihombo	Ignas Chigadu	NATAK6Q	Soybean-Line 8 and beans Uyole Njano	27/03/2015
	Chigugu	Victoria Yohana	NATAK6Q	Soybean-Line 8 and beans	25/03/2015

				Uyole Njano	
	Msufini	Hawa Hariri	NATAK6Q	Soybean-Line 8 and beans Uyole Njano	01/04/2015
	Lukenge	Omari Gwalu	NATAK6Q	Soybean-Line 8 and beans Uyole Njano	31/03/2015
	Hoza	Habiba Botto	NATAK6Q	Soybean-Line 8 and beans Uyole Njano	26/03/2015

In addition to maize, three legumes (common bean, groundnut, soybean), were selected for scaling. For common beans, Jeska, Uyole Njano, and SUA Njano with yield potential above the average yield of 600kg ha^{-1} were selected. Line 8, an improved soybean variety, was selected while Pendo and Mnanje were considered for groundnuts. The selected improved maize and legume varieties were identified in early Africa RISING research as being tolerant to many environmental stresses such as drought and low soil fertility, as well as many major common foliar plant diseases.

Vegetables:

i. Nurseries establishment

In each of the nine sites (eight farms and one school - Table 3), a nursery with four beds of 5m² each plus four trays (66 holes per tray) were planted as part of practical training for both farmers and local extension agents. The vegetables promoted were tomatoes (Tengeru 2010), African Eggplant (DB3 and Tengeru White) and African nightshade (Nduruma).

3.4 Better crop management and natural resource conservation

Maize system: As indicated in Table 5, a number of crop management and natural resource conservation practices were established at the farm sites.

Table 5: Better crop management and natural resource conservation practices being promoted

District	Intervention	
	Better Management	Natural Resource Management
Babati	Good Agricultural Practices (GAP) applied to all villages. This includes timely weed management, timely fertilizer application, timely thinning to maintain the recommended plant population	A legume crop (beans and cowpeas in some villages) was planted as intercrop with maize; this has the advantage of adding nitrogen to the soil through biological fixation.
Kiteto	GAP were applied in all villages	Tie ridges were established
Kongwa	GAP were applied in all villages	A legume crop was planted

		(Groundnuts) as pure stand. This will improve the soil nitrogen. Tie ridges were used to conserve water and reduce erosion.
Mvomero	Just planted	Legume crops included as soil nitrogen improvement strategy
Kilosa	Just Planted	Cowpea was included as an intercrop with maize. Cowpea is the farmer-preferred legume in these areas

- (i) *Good Agricultural Practices:* These were timely weed management, timely fertilizer application and timely thinning to maintain recommended plant population. The practices have been established in all districts except Mvomero and Kilosa where the demonstration plots were established late in the quarter due to delayed rains.

For *natural resource management*, intercropping of legumes (beans and cowpeas) have been done to improve nitrogen in the soils. In Kiteto district, tie ridges have been established to control soil erosion. Figure 2 shows one of the demonstration sites in Kongwa with maize and groundnuts



Figure 2: Maize-legume cropping in Kongwa District, Dodoma Region. *Photo credit: Haroon Sseguya*

Rice system: A number of crop management practices have been introduced. These were:

(i) *Promotion of motorized paddy weeders:* A protocol has been developed with local partners. Currently we are in the first phase of this protocol: farmer-participatory demonstration of three models of motorized paddy weeders (single-row and double-row (Indian types) and double-row (Japanese type)) to select a model that will be further developed into a local prototype. At four sites – Mbeya, Kilombero, Moshi and Morogoro – demonstration fields have been established with rice at 25 cm row spacing. Four demonstrations and training on the three models of motorized weeders have been conducted so far with 20 to 30 farmers, NAFKA staff and engineers (different public-private stakeholders at each location).



Figure 3: Demonstration of a motorized paddy weeder in Morogoro. *Photo credit: Jonne Rodenburg*

A second round of demonstrations will be done in the next quarter. Figure 3 shows one of the demonstrations in Morogoro region. After each demonstration, all participants were interviewed following a structured questionnaire to obtain information on the farmer preferences and feedback. Data will be presented in the next quarter.

(ii) *Development of an electronic decision support tool for farmers to aid with weed management:* Activities towards development of the decision support tool, RiceAdvice-weeds' were started. The first matrix structure has been developed with 88 characterizations and 52 weed management strategies (4,576 choice options). This will serve as the base-model behind the decision support tool. More activities will be done in the next quarter focusing on detailing the weed management recommendations to make them implementable by farmers.

(iii) *Efficiency of foliar sprays under different rice growing conditions and their economic implication to rice farmers:* Thirty (30) on-farm demonstrations were established in Kilombero (irrigated and rainfed rice growing conditions) and Morogoro (upland rice growing condition). In order to capture the efficiency of foliar nutrients in rice under different rice growing environments, the demonstrations are being conducted in three different major rice growing environments including 1) irrigated lowlands, 2) rainfed lowlands and 3) rainfed uplands.

(iv) *Farmer-participatory on-farm Good Agricultural Practices (GAP) demonstration in Kilombero and weed management strategies in Kyela:* In the Kilombero hub, 30 farmers were selected from the list of 50 farmers who were involved in the previous yield gap surveys. These farmers were trained for two days on the selected GAPs. Four GAP component technologies were demonstrated 1) certified SARO5 seeds; 2) field bunding and leveling; 3) line planting; and 4) optimum and timely use of NPK fertilizers. The above activities were implemented in partnership with our NARS partner (ARI-KATRIN) and NAFAKA under rainfed lowland rice growing conditions. In Kyela, 50 farmers were selected that showed interest in on-farm demonstration of different weed management practices (sowing dates, varieties, soil fertility amendments – applied singly and also in combination). The demonstrations are focusing on the parasitic weed *Rhamphicarpa fistulosa* in the lower parts of the upland-lowland continuum, and *Striga asiatica* in the upper parts of the continuum. For both problem weeds, we composed a group of 25 farmers that were sub-divided into 5 sub-groups. Each sub-group manages a one acre field where the four management strategies are implemented and tested against the farmer practice.

Vegetables: The practices promoted in the vegetables component were:

(i) *Demonstration of nursery bed practices:* These focused on the following aspects: land and seed bed preparation, raising seedlings, establishing and managing the seedbed. Demonstration plots each with sizes of 200m² (10m x 20m) at nine sites were demarcated and the plans handed over to group leaders and village-based agricultural extension workers. Each site has an average of 17 trainees and one local extension officer all of whom will become future trainers.

(ii) *Seeds, equipment and chemicals:* Nine seedkits, nine watering cans, 36 seeding trays and nine packets of insecticides (50 grams per packets) were deployed for nursery establishments.



Figure 4: Training on nursery bed management in Babati. Photo credit: Hassan Mdinga

3.5 Improved Household Nutrition and Reduction of Food Waste and Spoilage

The household nutrition activity was affected by the scaling down of activities by TUBOCHA in the focus region of this project. During the reporting period, the team conducted a baseline survey to establish the constraints associated with post-harvest losses in Kiteto, Mvomero and Kongwa Districts covering 255 households. The team also started preparation of training materials aimed at increasing farmers' knowledge on good postharvest management practices regarding pre-harvesting and postharvest management (processing, storage and utilization) of cereal crops.

3.6 Community empowerment for Sustainability

The following activities were conducted for **the rice based system**:

(i) *Baseline & diagnostic surveys to inform value chain enhancement*: Following the survey protocol developed by AfricaRice, villages, households and post-harvest actors (millers, traders, restaurants) in the Kilombero Rice Hub that will be included in the surveys were selected. Such sampling exercise was jointly done with ARI Ilonga, ARI-KATRIN and village agricultural extension officers. NAFKA provided a list of villages where it is implementing activities. Thirty-two villages that are representative of the hub were selected. Due to the limited funds, the first survey will cover 15 villages and post-harvest actors (up to consumers- urban consumers will be randomly selected at the time of survey).

(ii) *Preparations for experimental auctions*: Visits to two markets (Morogoro and Mawenzi) and one supermarket were done in February to appraise the context of rice marketing in Morogoro city; informal interviews were held with traders, processors and rice consumers. Based on the market observations, four rice products are suggested to be included in the experimental auctions that will be held in the next quarter. These include: Supa Mbeya, Supa Ifakara, SARO5, and 'a mix of varieties' as sold in the market. Samples of these rice types were purchased and distributed to women who are currently testing them in their homes to elicit quality differences prior to experimental auctions.

For the vegetables component, sensitization meetings involving sharing information with the district subject matter specialists, village based extension workers and local group leaders were held. The total number of participants was 158 (56 females and 102 males). The purpose was to provide actors with information about the importance of vegetable consumption for improved nutrition, as well as for income generation.

4 ACHIEVEMENTS AND RESULTS

Maize system

- i. 26 demonstration sites for maize improved varieties (total) were established
- ii. Five demonstration sites for legumes (beans) were established in Babati. In addition, five demonstrations for groundnuts were established in Kongwa District and six for soybean were established in Mvomero District.
- iii. At all sites, both for maize and legumes, a variety of GAP and natural resource conservation measures were established as indicated in Table 5.
- iv. 0.3 ha of seed maize has been planted by AMINATA Seed Company to produce one ton of maize seed for use during stage two scaling.

Rice system

- i. Demonstration of a locally fabricated motorized paddy weeder
 - Protocol developed and shared with partners
 - Three motorized weeder models imported in Tanzania from Japan and India
 - Five additional local partners identified and involved in development work
 - Four demonstrations conducted, 106 farmers interviewed
 - Machinery release procedures for mass production in Tanzania discussed within PPP (The Centre for Agricultural Mechanization and Rural Technology, CAMARTEC and Intermech)
- ii. Development of an electronic decision support tool for farmers to aid with weed management
 - Protocols for development of 'RiceAdvice-weeds' tool initiated
 - Interface and technical platform selected
 - 88 x 52 matrix developed as base model
 - Work plan with programmer developed and implementation started
- iii. Efficiency of foliar sprays under different rice growing conditions and their economic implication to rice farmers
 - Protocol developed
 - Five products selected
 - 30 on-farm demonstrations established
- iv. Farmer-participatory on-farm GAP testing in Kilombero and weed management strategies in Kyela (Mbeya Region)
 - 30 farmers in Kilombero trained in GAP
 - 40 farmers actively involved in parasitic weed management demonstrations in Kyela

Vegetables

- i. The team managed to conduct nine awareness creation meetings, during which a total of 149 people were sensitized, each of which received a handout. The awareness creation meetings also included a brief training on good group processes and dynamics.
- ii. Nine hands-on trainings on nursery management with 149 participants were conducted for

farmers and secondary school children.

- iii. Nine nursery plots with four different vegetable crops each (nine seedkits in total) were established in three districts, 5m² each for four vegetable crops totaling 180m² of improved nursery practices.
- iv. As part of the on-field practical training, inputs were supplied for improved nursery management; these included nine watering cans and insecticides.
- v. The team managed to demarcate sites for the main demonstration plots, where the main agronomic training activities will take place.

Post-harvest

A baseline survey covering 255 respondents on the constraints associated with post-harvest losses in Kiteto, Mvomero and Kongwa Districts was accomplished.

5 PROBLEMS AND CHALLENGES

- (i) *Unpredictable weather:* Due to a prolonged dry spell in February and March all the 10 upland rice demonstrations set-up in December 2015 for the nutrient foliar spray work failed. These have been replanted when the rains resumed in March 2015. Further, when rains finally started, in some parts of Kongwa and Kiteto they were so heavy to the extent that flooding affected establishment of demonstration gardens, especially for vegetables.
- (ii) *Rural infrastructure:* The condition of rural infrastructure, especially roads, is challenging. This hampered the teams' visits to some villages and farm locations, especially because these took place during the rainy season.



Figure 5: Disruption of travel due to poor infrastructure in Kongwa District. *Photo credit: Haroon Sseguya*

- (iii) The slow rate of responses of some partners is a challenge for timely implementation of demonstrations and effective management of the project. This issue was a subject of discussion during the team meeting and it was agreed that that next year's planning should be held during July to allow enough time for addressing causes before the planting season.
- (iv) The project has experienced scenarios of farmers' withdrawal after establishment of the demonstration plot on their land. This has hampered continuity of the activities for effective scaling as well as realizing the targets originally planned for.
- (v) Lack of presence of NAFKA in some sites, which potentially hinders scaling activities. We plan to budget for alternate private development partners (Public-Private Partnerships -PPP) to fill the gap.
- (vi) Lack of availability and access to appropriate inputs (seed, chemicals). We plan to ensure early planning, which will allow for timely engagement with the input dealers to make the inputs available.

6 PLANNED ACTIVITIES FOR Q3

6.1 General

- The project will understudy the NAFKA system of mother-baby trials and field days and adapt it to enhance scaling up of the interventions.
- Baseline data available at NAFKA and other project partners are to be availed for meta-analysis and mapping so as to guide the horizontal scaling of technologies.
- Initiate formation of R4D/Innovation platforms in the project action sites to enable stakeholders to participate in the various aspects of the project.
- Conduct a reconnaissance visit to Mbeya and Iringa Regions in preparation for the launch of the project in the regions in year 2.
- Finalize the monitoring and evaluation plan for the project.

Specific activities for each team include:

6.2 Rice System

- The four remaining motorized weeder demonstrations will be conducted in April. The following month (May) will be used for data processing and analyses of the farmer feedback questionnaires. In June we will start working with Intermech and Nafaka to develop a locally fabricated prototype, based on the information and feedback gathered during the demonstrations.
- The development of RiceAdvice-weeds will be continued in April and May.

- Farmer participatory on-farm GAP demonstrations and parasitic weed management demonstrations will continue. A first round of farmer-exchange visits and individual questionnaires will be conducted in April and a second one at or around harvest.
- Experimental auctions will be conducted from 13 to 18 April 2015. Prior to conducting the auctions, a training of partners is planned. The objective is that they can learn this tool applied in marketing research, actively participate in subsequent experimental auctions and gain the skill to apply the tool on their own.

6.3 Vegetables

- Establishments of main demonstration plots in late March to early April 2015. This will also involve introduction of other crops such as amaranths, jute and jute mallow.
- Joint selection of sites in Morogoro region with AfricaRice and NAFKA
- Distribute about 100 seedkits to farmers per site making the total of 900 seedkits in three districts. The methodology to be followed is the Training-of-Trainers (ToT) approach. It is planned to proceed as follows: Each registered participant of the initial trainings the project team has provided (called the farmer trainers), will be asked to find four other farmers (called the farmer trainees) who will be trained by the farmer trainers. The farmer trainees will also be provided with seedkits to establish their own vegetable garden. The selection criteria for farmer trainees were discussed with the farmer trainers and agreed to be the following:
 - *Trainee should be willing to participate in and currently practice vegetable farming.*
 - *Trainee should have a land area of not less than 200m².*
 - *Trainee should participate in the next training session and register as trainee and beneficiary of the AVRDC seedkit and trainings.*
 - *Trainee should be willing to provide the data that will be required by AVRDC in the future.*

The approach will enable AVRDC and its partner HORTI-Tengeru to achieve the target by reaching the minimum of 900 farmers and maximum of 1200 farmers in year one by distributing 900-1200 vegetable seedkits.

- Training of trainees on GAP (transplanting techniques, right spacing, plant population, appropriate use of fertilizers and chemicals).
- Distribution of training materials on vegetable production, consumption and postharvest handling.

6.4 Maize System

- Training of lead farmers in all action sites
- Conducting field days at mother sites
- Developing extension materials on GAP

6.5 Post-harvest and Nutrition

- Management and analysis of survey data (post-harvest loss).
- Development of training materials.
- Survey of processors in TUBOCHA villages.

- Identification of locations for demonstration centers for the post-harvest handling technologies (shelling, drying, storage and food product development).
- Conduct training and demonstration on postharvest handling of cereal products.

7 SPECIAL ISSUES

The TUBOCHA project ends in June 2015 and will not continue under another mechanism at this time. The supply chain management work, which is the link between TUBOCHA and Africa RISING will continue with the NAFKA/Africa RISING partnership as NAFKA's work is moving downstream from the farm to the processor, and several of our project clients are already connected with NAFKA and a full client has been shared and will be included again as part of a handover. USAID, in partnership with the Government of Tanzania, is committed to continuing to support fortification, but the how/when/where is still under development.

8 CROSS-CUTTING ISSUES

8.1 Gender integration

For vegetable-related work, during the sensitization meetings and the establishment of the demonstration plots, the group leaders were being sensitized on the importance of including women in several community activities like meetings, decision making and other economic activities including vegetable farming. There was an observed low participation of women in Babati and Kongwa. In Kiteto the situation was different as the number of women outweighed the number of men. The project team still sees it as a promising challenge to fully empower women in the vegetable value chain in Babati and Kongwa. The team will further sensitize the group leaders to register those women who are active in the community and willing to be involved. In Kibaya secondary school there was a good mix of boys and girls selected by the school administration to handle the school demonstration garden. Based on that, the team hopes to reach far in promoting gender balance in vegetable production, consumption and marketing even for the next generation of farmers. The issue of gender inequality in most areas in Kiteto and Kongwa is also strongly influenced by external factors. Thus, although women are better consumers of vegetables than men, women in those areas do not have access to land and other resources to invest in commercial vegetable production. This fact finally discourages women's willingness to be involved in vegetable production.

In the rice-based systems work, a representative share of women are involved in all activities. Many of the rice production activities we focus on, like transplanting and weeding but also marketing, are actually mostly carried out by women. Hence the demonstrations of GAP and motorized paddy weeders, as well as the value chain reinforcement work, will benefit women at least as much as men.

8.2 Behavior change communication

In the rice-systems work, the innovation platforms established directly contribute to a behavior change as stakeholders improve their communication and mutual understanding. With the rice-base systems GAP demonstrations farmers are exposed to improved but accessible and affordable practices that will

contribute to a behavior change at the field level. Rather than continuing with doing their ‘business as usual’, we expect that farmers will change certain practices and that they will start seeing the opportunities of experimentation on their own farm in order to fine-tune their practices.

For the vegetables-related work, the team uses direct communication, interactive discussions and experience-sharing methods during the sensitization process and during the practical trainings at the demonstration plots, together with the use of key informants such as district and subject matter specialists, local extension agents and the participating farmers themselves.

Training handouts in Swahili were distributed to all participants, and detailed step-by-step establishment of nurseries, seedling handling, pests and disease control using IPM and postharvest handling practices. In addition, on-farm practical demonstrations will also help farmers to improve their farming practices as they can easily adopt new methods by observing and applying the improved methods in their daily vegetable farming activities.

8.3 Environmental compliance and natural resource management

For the rice, maize and vegetables-related work, GAP are being promoted to ensure sustainable use of soil and water. For vegetables, different types of seedbeds such as raised seedbeds and the use of seedling trays were demonstrated and adapted to local conditions like terrain, soil type, irrigation methods and season. *In situ* water conservation and harvesting, rather than using running water that may lead to soil erosion and loss of nutrients, were strongly emphasized. The problems of indiscriminate use of chemicals are approached by introducing IPM practices. Also, the superior vegetable varieties introduced by the project team are more resistant/tolerant to pests and diseases, and will therefore reduce pesticide application. For example, the newly introduced tomato variety Tengeru 2010 is blight resistant, and thus reduces the frequent use of fungicides, conserving the environment.

For rice-based work, by demonstration of GAP, foliar nutrition and rotary weeders to rice farmers, the rice-based systems team expects to contribute to reduced use and misuse of pesticides. Currently most of the pesticides used in rice are herbicides. Good agricultural practices will render the crop more competitive against weeds making farmers less dependent on weed intervention technologies. Second, by providing farmers with another laborsaving weed intervention technology, the need for herbicides will further reduce. Thirdly, the weed management decision support tool that the rice-based systems team is working on will enhance the basket of options for good and efficient weed management to farmers with a lower reliance on herbicides. The use of the foliar nutrition spray and the recommendations of good and timely use of fertilizer will enable rice farmers to increase the fertilizer use efficiency, with obvious benefits for the surrounding ecosystems.

8.4 Monitoring and evaluation

A monitoring and evaluation plan is being finalized. FtF indicators have been identified at project level (Table 6) and are to be discussed with the Mission for endorsement.

Table 6: FtF indicators identified for tracking under the AR-NAFAKA-TUBOCHA Project

FtF Ref		INDICATORS
4.5(16,17,18)	1	Gross margin per hectare of selected product
4.5.2(2)	2	Number of hectares under improved technologies or management practices as a result of USG assistance
4.5.2(5)	3	Number of farmers and others who have applied new technologies or management practices as a result of USG assistance
4.5.2(6)	4	Number of individuals who have received USG supported long-term agricultural sector productivity or food security training
4.5.2(7)	5	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training
4.5.2(11)	6	Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance
4.5.2(12)	7	Number of public-private partnerships formed as a result of FTF assistance
4.5.2(13)	8	Number of rural households benefiting directly from USG interventions
4.5.2(14)	9	Number of vulnerable households benefiting directly from USG assistance
4.5.2(23)	10	Value of incremental sales (collected at farm-level) attributed to FTF implementation
4.5.2(39)	11	Number of new technologies or management practices in one of the following phases of development (Phases I/II/III)
4.5.2(42)	12	Number of private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) that applied new technologies or management practices as a result of USG assistance
4.5.1(CBL D 5)	13	Score, in percent, of combined key areas of organization capacity amongst USG direct and indirect local implementing partners

CUSTOM INDICATORS COLLECTED BY IMPLEMENTING PARTNERS

14	MT of paddy, rice or maize sold by producer associations
15	Number of targeted beneficiaries reached
16	Number of beneficiaries with home gardens or alternate crops as a proxy for access to nutritious foods and income

9 ANNEXES

Annex 1: Performance against PMP indicators

Performance assessment will be reported in the next quarter after endorsement of the PMP indicators.

Annex 2: Success stories submitted to USAID Mission during the quarter

No success stories have been submitted to USAID during the reporting quarter.